

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 09/964,693
Atty Docket No.: Q66444

REMARKS

The Office Action of May 16. 2003 has been received and its contents carefully considered.

The Examiner sets forth 15 separate rejections of the claims. Applicants discuss each of the rejections below.

Claims 1, 2, 6(1), 6(2), 7(1), 7(2), 8(1), 8(2), 9(1), 9(2), 13(1), 13(2), 14(1), 14(2), and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over JP-10-267360A, referred to by the Examiner as Watanabe '360, in view of U.S. Patent 4,431,764 to Yoshizumi, in Paragraph 1 of the Office Action .

The JP-10-267360 document that the Examiner refers to is the patent application number for a patent application filed in Japan on September 4, 1998. This application was published on March 21, 2000 under the No. JP-2000-080230A. Applicants believe the Examiner should have referred to this publication number, instead of the application number. In the following discussion, applicants refer to this document as JP '230.

Applicants note that what the Examiner sent was an English-language abstract of this document and an English-language translation of various portions of the specification of this document. The Examiner did not send the Japanese document, or the complete translation of the document. For example, the Examiner did not send the claims of this document.

The Examiner states that JP '230 teaches a flame retardant molded object that contains a layer comprised of 100 parts by weight vinyl chloride resin having a chlorination degree of 58-

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73%, and 4 to 30 parts by weight of titanium dioxide. This layer can be coated with a surface layer on one or both of its sides.

The Examiner asserts that JP '230 discloses the recitations of the above claims, except that JP '230 does not teach that the molded object may be coated on one side with an antistatic composition.

The Examiner cites Yoshizumi as teaching an antistatic coating composition comprising tin oxide which is coated onto nonconductive coatings that need antistatic properties. The tin oxide in Yoshizumi is dispersed in a binder resin, such as a vinyl chloride resin or a thermosetting resin, as disclosed at column 2, lines 41+.

The Examiner argues that it would have been obvious to apply the coating taught in Yoshizumi onto the substrate taught in JP '230 in order to provide the JP '230 substrate with antistatic properties.

With respect to claim 13, the Examiner states that Yoshizumi does not teach the claimed chlorination content of the vinyl chloride binder. The Examiner states, however, that JP '230 teaches that the chlorination degree of a polymer will affect its fire resistance, thermal stability and moldability, as disclosed in Paragraph [0015]. The Examiner asserts that, therefore, it would have been obvious to control the chlorination degree of the vinyl chloride binder in order to control the laminate's moldability, thermal stability and fire resistance.

With respect to claims 8(1) and 8(2), the Examiner states that the combination of JP '230 and Holley reads on the claimed invention, wherein both surfaces of the molded object has a

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surface layer. The Examiner states that the molded object reads on the intermediate layer and the skin layer removed from the antistatic coating reads on the base layer.

The Examiner does not include the Holley patent in the statement of this rejection and, therefore, the reference to Holley is somewhat confusing. Applicants assume the Examiner intended to refer to Yoshizumi.

Applicants have amended claims 1, 2 and 4 to recite the intermediate layer from claims 6 and 8. Thus, claims 1, 2 and 4 recite the presence of an intermediate layer that has a composition different from that of the base layer and uses a vinyl chloride resin having a chlorination degree of from 58 to 73%. Claims 1, 2 and 4 are referred to herein as having construction (a) of the present invention.

In addition, applicants have added new claims 16, 17 and 18 that recite the presence of an intermediate layer that has a thickness of less than 200 µm, does not contain titanium oxide, has a chlorination degree of less than 58% and has a composition different from the base layer. These claims thus recite the intermediate layer from claims 6 and 9. With respect to the phrase "does not contain titanium oxide," this is clearly supported by the fact that an intermediate layer which does not contain titanium oxide is prepared in Example 9. Claims 16, 17 and 18 are referred to herein as having construction (b) of the present invention.

In addition, applicants have added new dependent claims 19 to 21, which are based on claims 13, 14 and 15, respectively, but which depend on each of the above-referred to independent claims that are now in the application. New dependent claim 22 is based on the

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disclosure at page 50 of the specification. A new independent claim 23 has been added that is based on the disclosure in the specification.

The JP '230 patent discloses two moldings, namely, (1) a molding in which from 4 to 30 parts by weight of titanium oxide is contained in a PVC having a chlorination degree of from 58 to 73%, and (2) a molding comprising a base layer in which from 4 to 30 parts by weight of titanium oxide is contained in a PVC having a chlorination degree of from 58 to 73% and a surface layer in which from 0 to 20 parts by weight of titanium oxide is contained in a PVC having a chlorination degree of from 50 to 57%. Also, the Yoshizumi patent discloses that a paint comprising a conductive powder comprising antimony and tin oxide, and a binder resin are applied to an acrylic resin and the like, and the thermoplastic or thermosetting resin can be used as the binder resin.

However, the characteristic points of the present application, namely, (a) the intermediate layer has a composition different from that of the base layer and uses a vinyl chloride resin having a chlorination degree of from 58 to 73% (claims 1, 2 and 4), and (b) the intermediate layer has a thickness of less than 200 µm, does not contain titanium oxide, has a chlorination degree of less than 58% and has a composition different from the base layer (claims 16, 17 and 18), are not described in these cited references.

A laminate of a base layer, a surface layer (intermediate layer) and an antistatic layer might be taught by the combination of JP '230 and the Yoshizumi patent. However, the surface layer of JP '230, which becomes an intermediate layer, uses a PVC having a chlorination degree of from 50 to 57% and contains from 0 to 20 parts by weight of titanium oxide.

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These cited references do not describe the use of an intermediate layer having the aforementioned construction (a) of the present application, particularly the use of an intermediate layer comprised of a PVC having a chlorination degree of from 58 to 73%. Contrary to this, in paragraph [0039] of JP '230, the use of a PVC in a surface layer having a chlorination degree of 58% or more is excluded, stating that it is unsuitable (cf. [0039]), so that one cannot conceive an idea of using a PVC having a chlorination degree of from 58 to 73% in this surface layer (intermediate layer of the present application). Since the surface layer of JP '230 is employed with the aim of improving chemical resistance using a PVC having a chlorination degree of from 50 to 57% (cf. [0018]), the use of a PVC having a chlorination degree of from 58 to 73%, which is inferior in chemical resistance, cannot be deduced from this point, too.

In the present application, in order to arrange an antistatic layer on the outermost surface, coating and laminating properties are improved by arranging an intermediate layer which does not contain titanium oxide (cf. [0012]), but since fire retardancy of the molding as a whole becomes inferior when a PVC having a chlorination degree of from 58% or less is used in such an intermediate layer, the fire retardancy is maintained by positively employing a PVC having a chlorination degree of from 58 to 73%.

In addition, these cited references do not describe the use of an intermediate layer having the aforementioned construction (b) of the present application, particularly the use of an intermediate layer having a thickness of less than 200 μm .

Surely, JP '230 uses a PVC having a chlorination degree of from 50 to 57%, but its thickness is defined as from 0.2 to 1.6 mm (cf. [0041]). According to the description in

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paragraph [0041] of JP '230, it describes that this thickness is a thickness decided by taking its chemical resistance and fire retardancy into consideration, and that an intermediate layer having a thickness of less than 0.2 mm cannot be employed due to inferior chemical resistance for a prolonged period of time, and the patent thereby excludes a thickness of less than 0.2 mm, so that those skilled in the art cannot positively deduce from JP '230 the use of an intermediate layer of a thickness of less than 0.2 mm or would deduce that such a thickness should not be employed.

According to the present application, it is not so much necessary to take chemical resistance into consideration in arranging an antistatic layer on the outermost surface, but on the contrary, when the thickness of the intermediate layer is increased to 0.2 mm or more, the occupying ratio of a PVC having a chlorination degree of less than 58% becomes so large that it becomes difficult to maintain fire retardancy of the moldings (cf. [0017]), so that applicants have come upon the concept of reducing it to less than 0.2 mm and have employed this thickness.

Thus, since the aforementioned constructions (a) and (b) of the intermediate layer of the present application are not described in each of the cited references and are constructions within the ranges excluded by JP '230, applicants submit that the claims of present application having these constructions are patentable over the cited prior art.

In view of the above, applicants submit that the cited references do not disclose or suggest the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

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Claims 1, 2, 6(1), 6(2), 7(1), 7(2), 8(1), 8(2), 9(1), 9(2) and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '360 [JP '230] in view of U.S. Patent 5,508,343 to Holley.

This rejection is similar to the above rejection, except that the Examiner relies on the Holley patent for a teaching of an antistatic composition.

The Examiner states that Holley teaches an antistatic composition comprising a water-soluble polymer, atitanate, and an ammonium salt. The Examiner points out that the antistatic composition in Holley can be employed in the production of semiconductor electronics. The Examiner further notes that the molded objects of JP '230 can be employed in equipment to make semiconductors, as disclosed in Paragraph [0002] of JP '230. The Examiner argues that it would have been obvious to coat the molded objects of JP '230 with the antistatic composition taught in Holley to prevent damage to semiconductor electronics that could come in contact with the object.

There is a disclosure in the Holley patent that a base material having antistatic property is prepared by coating an antistatic paint. However, since JP '230 does not describe or suggest the use of intermediate layer (surface layer) having the aforementioned constructions (a) and (b), which are recited in the present claims, applicants submit that the combination of JP'230 and Holley would not have led one of ordinary skill in the art to the subject matter of the present claims.

In view of the above, applicants submit that the present claims are patentable over the cited prior art and, accordingly, request withdrawal of this rejection.

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Claims 10(1) and 10(2) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '360 [JP '230] in view of Holley, and further in view of JP 11-067945A, referred to by the Examiner as Watanabe '945.

In addition, Claims 10(1) and 10(2) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '360 [JP '230] in view of Holley and further in view of Coaker et al.

Claim 10 has been cancelled. Accordingly, these rejections are moot.

Claims 11(1) and 11(2) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '360 [JP '230] in view of Holley and further in view of Watanabe '945.

Claim 11 has been canceled. Accordingly, these rejections are moot.

Claims 12(1), 12(2), 5, 6(5), 7(5), 8(5), 9(5), 12(5) and 15(5) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '360 [JP '230] in view of Holley and further in view of Watanabe '359.

Each of the above claims have been canceled. Accordingly, this rejection is moot.

Claims 4, 6(4), 7(4), 8(4), 9(4), 11(4), 13(4), 14(4) and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '945 [JP '945] and Yoshizumi, as set forth in Paragraph 7 of the Office Action.

This rejection is substantially similar to the rejection in Paragraph 1 of the Office Action, except that the Examiner relies on JP '945 as the primary reference instead of Watanabe '360 [JP '230] as the primary reference.

JP '945 discloses a molding which comprises a base layer prepared by adding from 4 to 30 parts by weight of titanium oxide and from 1 to 10 parts by weight of molybdenum or the like

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fire retarding agent to a PVC having a chlorination degree of from 58 to 73%, and a surface layer prepared by adding from 0 to 20 parts by weight of titanium oxide and from 0 to 8 parts by weight of molybdenum or the like fire retarding agent to a PVC having a chlorination degree of between 50% or more and less than 58%.

However, the aforementioned constructions (a) and (b) of the intermediate layer as characteristic points of the present application, are not described in any of the cited references. A laminate of a molybdenum-containing base layer, a surface layer (intermediate layer) and an antistatic layer might be taught by the combination of JP '945 patent and the Yoshizumi patent. However, the surface layer of JP '945 patent which becomes an intermediate layer, is prepared by using a PVC having a chlorination degree of between 50% or more and less than 58%, and adding thereto from 0 to 20 parts by weight of titanium oxide and from 0 to 8 parts by weight of molybdenum or the like fire retarding agent.

The use of an intermediate layer having the aforementioned construction (a), namely, an intermediate layer that has a composition different from that of the base layer and which uses a vinyl chloride resin having a chlorination degree of from 58 to 73%, is not described in the cited reference. It is described in paragraph [0041] of JP '945 that the use of a PVC having a chlorination degree of 58% or more in the surface layer is not desirable in view of chemical resistance, elongation and workability, and thus JP '945 teaches that its use is unsuitable.

Accordingly, one cannot think of positively using a PVC having a chlorination degree of 58% or more, pointed out to be unsuitable, as the intermediate layer, and cannot be led to the idea of positively using it. In the present application, in order to arrange an antistatic layer on the

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outermost surface, coating and laminating properties are improved by arranging an intermediate layer which does not contain titanium oxide, but because of a special reason that fire retardancy of the molding as a whole becomes inferior when a PVC having a chlorination degree of less than 58% is used in said intermediate layer, the fire retardancy is maintained by positively employing a PVC having a chlorination degree of from 58 to 73%, which is excluded in JP '945.

In addition, formation of an intermediate layer by the aforementioned construction (b), namely, an intermediate layer having a thickness of less than 200 µm, does not contain titanium oxide, has a chlorination degree of less than 58% and has a composition different from the base layer, is not described in the cited references. JP '945 patent uses a PVC having a chlorination degree of between 50% or more and less than 58%, and its thickness is from 0.2 to 1.6 mm (cf. [0045]). According to the description in paragraph [0045] of JP '945, this thickness is a thickness decided by taking its long-term chemical resistance and fire retardancy into consideration, and it describes that a thickness of 0.2 mm or less is not desirable due to inferior chemical resistance for a prolonged period of time, and thereby excludes a thickness of less than 0.2 mm as being unsuitable.

Accordingly, those skilled in the art cannot positively deduce an intermediate layer having a thickness of this range which is excluded JP '945 as being unsuitable, namely, less than 0.2 mm, and cannot be led to the idea of employing such a thickness. According to the present application, it is not so much necessary to take chemical resistance into consideration in arranging an antistatic layer on the outermost surface, but on the contrary, when the thickness of the intermediate layer is increased to 0.2 mm or more, the occupying ratio of a PVC having a

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chlorination degree of less than 58% becomes so large that it becomes difficult to maintain fire retardancy of the moldings, so that applicants have come upon the concept of reducing the thickness to less than 0.2 mm, which is excluded by JP '945 patent, and have employed this thickness.

Thus, since the aforementioned constructions (a) and (b) of the intermediate layer of the present application are not described in each of the cited references, and are constructions within the ranges excluded by JP '945 patent, the present application having these constructions are patentable over the cited prior art.

In view of the above, applicants request withdrawal of this rejection.

Claims 3, 6(3), 7(3), 8(3), 9(3), 10(3), 11(3), 13(3), 14(3), 15(3) and 10(4) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '945 in view of Yoshizumi and further in view of Coaker et al.

Each of these claims have been canceled. Accordingly, this rejection is moot.

Claims 4, 6(4), 7(4), 8(4), 9(4), 11(4), 13(4), 14(4), and 15 have been rejected under 35 U.S.C. § 103 as obvious over Watanabe '945 in view of Yoshizumi.

This rejection is identical to the rejection in Paragraph 7 of the Office Action, except that the Examiner, in the last two paragraphs of the rejection, at page 10 of the Office Action, sets forth comments with respect to claims 9 to 12 and 8(4).

Applicants submit that the present claims are patentable for the same reasons as discussed in connection with the rejection in Paragraph 7 of the Office Action.

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Claims 12(4), 5, 6(5), 7(5), 8(5), 9(5), 11(5), 13(5), 14(5) and 15(5) have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '945 in view of Yoshizumi, and further in view of JP 2000-076359, which the Examiner refers to as Watanabe '359.

Each of these claims have been canceled. Accordingly, this rejection is moot.

Claims 4, 6(4), 7(4), 8(4), 9(4), 11(4) and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over Watanabe '945 [JP '945] in view of Holley.

JP '945 patent discloses a molding in which a base layer containing titanium oxide and molybdenum compound and a surface layer are laminated, and Holley discloses that a base material having antistatic property is prepared by coating an antistatic paint. However, as described in detail above in connection with the rejection in Paragraph 7 of the Office Action, JP '945 patent does not describe or suggest the use of an intermediate layer (surface layer) that has the aforementioned constructions (a) and (b), and describes the ranges as being unsuitable. Accordingly, the claims of the present application are patentable over JP '945 in view of Holley for the same reason as set forth above.

Therefore, applicants request withdrawal of this rejection.

In Paragraphs 12 to 15 of the Office Action , the Examiner sets forth four separate rejections of the claims based on the combination of Watanabe '945 and Holley, and further references such as Watanabe '359 and Coaker et al, where appropriate. These rejections are substantially similar to the previous rejections, except the Examiner relies on Holley as the secondary reference for teaching an antistatic layer.

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These rejections are based on claims (3 and 5) that have been cancelled and, accordingly, are moot. Further, to the extent these rejections are based on Watanabe '945 and Holley, see applicants comments above on each of these references

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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